

Four new species of the genus *Rodrigama* Gauld, 1991 (Hymenoptera, Ichneumonidae, Poemeniinae) from South Korea

Jin-Kyung Choi¹, Jong-Wook Lee²

¹ Department of Science Education, Daegu National University of Education, Daegu, 42411, South Korea

² Department of Life Sciences, Yeungnam University, Gyeongsan, 38543, South Korea

Corresponding author: Jong-Wook Lee (jwlee1@ynu.ac.kr)

Academic editor: Gavin Broad | Received 26 September 2019 | Accepted 16 January 2020 | Published 27 February 2020

<http://zoobank.org/F63A0FF3-AFD8-48EF-BF27-CF84D2EF26D1>

Citation: Choi J-K, Lee J-W (2020) Four new species of the genus *Rodrigama* Gauld, 1991 (Hymenoptera, Ichneumonidae, Poemeniinae) from South Korea. *Journal of Hymenoptera Research* 75: 1–13. <https://doi.org/10.3897/jhr.75.46867>

Abstract

Four new species of the genus *Rodrigama* Gauld are described: *R. sobaekensis* sp. nov., *R. koreana* sp. nov., *R. wooki* sp. nov. and *R. unmunensis* sp. nov., all from South Korea. The 11 species of *Rodrigama* are distributed across Central America and Asia, comprising seven previously recorded species and the four new species presented here. An illustrated key to South Korean species of *Rodrigama* is provided.

Keywords

Old World, *R. koreana* sp. nov., *R. sobaekensis* sp. nov., *R. unmunensis* sp. nov., *R. wooki* sp. nov., taxonomy

Introduction

The genus *Rodrigama* is a unique ichneumonid with oblique grooves delimiting a central rhombic area on the second tergite (Wahl and Gauld 1998). According to Wahl and Gauld (1998), *Rodrigama* occupies a basal position in the Poemeniinae. Therefore this genus was bestowed the tribal status ‘Rodrigamini’. *Rodrigama* has a disjunct distribution, it is found in Central America, Japan, Taiwan, the Far East of China, Israel, and now in South Korea. It is strongly supported that the distribution pattern of this genus is a relic from a more widely distributed basal lineage of Pimpliformes in the Old World (Wahl and Gauld 1998; Matsumoto and Broad 2011; Broad and Kuslitzky 2019).

Rodrigama is a small genus in the tribe Rodrigamini of the subfamily Poemeniinae, consisting of five species (Yu et al. 2016). This genus was reported from a single Costa Rican species, and two species have been reported from Japan and Taiwan. Recently, one species, *R. maculata* (Sheng and Sun 2010), was transferred from *Pimplaetus* by Sheng et al. in 2014. Also, Broad and Kuslitzky (2019) described one new species, *R. freidbergi* from Israel, and proposed a new combination, *Rodrigama taishanense* (He, 1996) from *Pimplaetus*. Thus, a total of seven species of *Rodrigama* are distributed across Central America and Asia.

In this study, four new species, *R. sobaekensis* sp. nov., *R. koreana* sp. nov., *R. wooki* sp. nov. and *R. unmunensis* sp. nov., from South Korea are described. Photographs, comparative illustrations and an identification key to South Korean species are also provided.

Materials and methods

Type specimens of the four new species are preserved in the Daegu National University of Education (DNUE, Daegu, Korea). Specimens used in this study were collected by sweeping, Malaise trapping and rearing. Paratypes of *R. gauldi*, *R. takakuwai*, and *R. gamezi* in the Natural History Museum, London (BMNH) were examined for comparison with the four new species. Images of specimens of the new species were taken using an AxioCam MRc5 camera attached to a stereo microscope (Zeiss SteREO Discovery. V20; Carl Zeiss, Göttingen, Germany), processed using AxioVision SE64 software (Carl Zeiss), and optimized with a Delta imaging system (i-solution, IMT i-Solution Inc. Vancouver, Canada). Morphological terminology follows that of Gauld (1991). Abbreviations are as follows: CB, Chungcheongbuk-do; GB, Gyeongsangbuk-do; GG, Gyeonggi-do; GW, Gangwon-do.

Taxonomy

Family Ichneumonidae Latreille, 1802

Subfamily Poemeniinae Narayanan & Lal, 1953

Tribe Rodrigamini Wahl & Gauld, 1998

Genus *Rodrigama* Gauld, 1991

Rodrigama Gauld, 1991: 536. Type species: *Rodrigama gamezi* Gauld, by original designation.

Diagnosis. Genus *Rodrigama* can be distinguished from all other poemeniines by the following characteristics: paired antero-lateral and postero-lateral oblique grooves delimiting a central rhombic area on the second tergite; fused tergite and sternite of the first tergite (Wahl and Gauld 1998; Matsumoto and Broad 2011).

Key to the species of South Korean *Rodrigama*

- 1 Body largely reddish yellow to brown (Fig. 1A); frons and vertex reddish brown (Fig. 2C). Pronotum black, upper margin of pronotum and antero-ventral part yellow (Fig. 2A). Scutellum and postscutellum yellow. Second metasomal tergite long, 1.85–2.10 times as long as wide, with dense and fine punctures (Fig. 2F). Body length longer than 25–27 mm ***R. sobaekensis* Choi & Lee**
- Body largely reddish brown to black (Figs 1B–D); frons black and vertex dark reddish black or both entirely black (Figs 3C, 4C and 5C). Pronotum without yellow spot. Scutellum black. Second metasomal tergite less than 1.70 times as long as wide, with rugose punctures. Body length shorter than 20 mm..... **2**
- 2 Length of second and third metasomal tergites equal to or shorter than width (Fig. 5F). First tergite less than 2.0 times as long as wide. First metasomal sternite extending to before spiracle (Fig. 5E). Epicnemial carina absent ***R. unmunensis* Choi & Lee**
- Length of second and third metasomal tergites greater than width. First metasomal tergite more than 2.3 times as long as wide. First metasomal sternite extending behind spiracle. Epicnemial carina present ventrally **3**
- 3 Second to fourth hind tarsomeres whitish. Body length 0.80–0.83 times as long as ovipositor length. First metasomal tergite more than 3.0 times as long as wide (Fig. 4G). Pronotum entirely black (Fig. 4A). Fore tibia with four stout spines on dorsal surface and two stout spines on distal end ***R. wooki* Choi**
- Second to fourth hind tarsomeres yellow. Body length 0.63–0.77 times as long as ovipositor length. First metasomal tergite less than 2.5 times as long as wide (Fig. 3G). Pronotum black with reddish spot antero-ventrally (Fig. 3A). Fore tibia with 14 stout spines on dorsal surface and three stout spines on distal end ***R. koreana* Choi & Lee**

***Rodrigama sobaekensis* Choi & Lee, sp. nov.**

<http://zoobank.org/5377FE10-44F2-473D-86D1-3C56867DFC68>

Figs 1A, 2A–H

Type. Holotype ♀, 19–30.iv.2007 (Malaise trap), Cheongdong valley (36°57'N, 128°26'E), Sobaeksan National Park, Cheondong-ri, Danyang-eup, Danyang-gun, CB, South Korea (J.W. Lee) [DNUE].

Paratypes. [South Korea] 1♀, 1–26.v.2009, Mt. Homyeongsan, Goseong-ri, Cheongpyeong-myeon, Gapyeong-gun, Alt. 220 m (37°43'16.3"N, 127°29'23.4"E), GG, (J.O. Lim); 1♀, 18–31.iv.2009, Mt. Homyeongsan, Goseong-ri, Cheongpyeong-myeon, Gapyeong-gun, Alt. 168 m (37°43'15.0"N, 127°29'18.9"E), GG, (J.O. Lim)

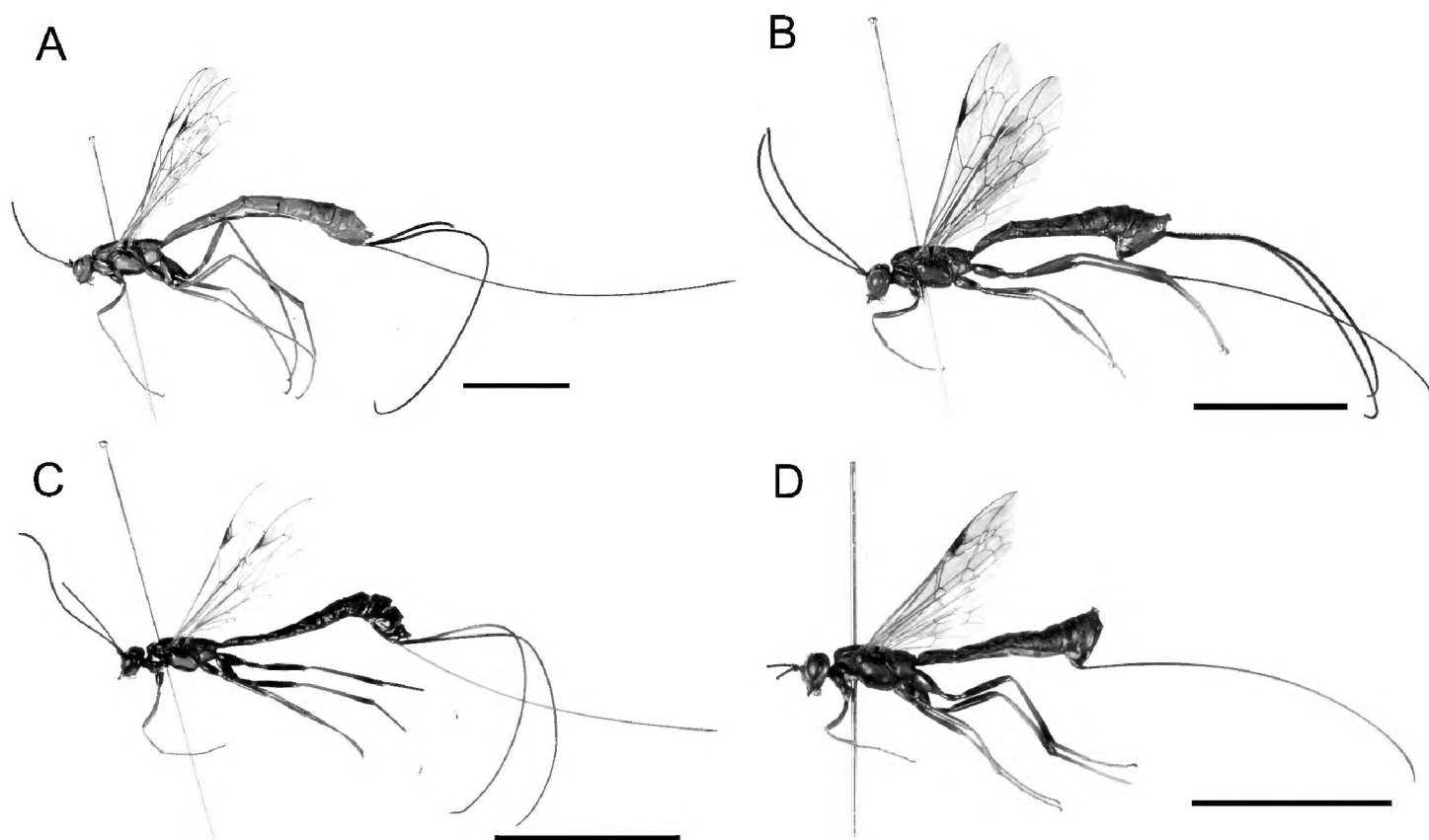


Figure 1. *Rodrigama* spp., habitus in lateral view (type specimens). **A** *R. sobaekensis* sp. nov. **B** *R. koreana* sp. nov. **C** *R. wooki* sp. nov. **D** *R. unmunensis* sp. nov. Scale bars: 10 mm).

Description. Female. Length of fore wing 18–19 mm; body 26–28 mm; ovipositor 35–36 mm. Malar space about 0.45 times as long as basal width of mandible. Inner orbits slightly converging ventrally (Fig. 2B). Occipital carina interrupted medially. Apical flagellomeres tapered and distal end truncate narrowly. Antenna with 33 flagellomeres. Pronotum with strongly impressed and transversely striate groove from epomia to ventroposterior corner; area dorsal to this groove rather strongly and densely punctate, slightly rugose. Mesoscutum in front of scuto-scutellar groove 1.4 times as long as wide in dorsal view (Fig. 2C). Mesopleuron moderately punctate, rather densely covered with pubescence (Fig. 2A); epicnemial carina present ventrally; mesopleural suture transversely striate. Propodeum rugosely punctate, transversely striate dorsomedially, without lateromedian longitudinal carina; posterior transverse carinae very weak and incomplete (Fig. 2D). Hind wing with eleven distal hamuli. Fore tibia with 10 stout spines on dorsal surface and two stout spines on distal end. Hind coxa elongate, 3.1 times as long as maximum width. First metasomal tergite broadened posteriorly in dorsal aspect, 4.1 times as long as posteriorly broad; slightly narrowed a little posterior to spiracle (Fig. 2G); first metasomal tergite with spiracle at anterior 0.41. Posterior end of first metasomal sternite at posterior 0.44 between spiracle and posterior end of first metasomal tergite (Fig. 2E). Second to fourth tergites sparsely covered with fine punctures.

Coloration. Body largely reddish yellow to brown. Face with narrow yellow stripe, extending along inner orbit to top of eye (Fig. 2B). Clypeus yellowish brown. Apical half of mandible black. Frons with black spots behind antennal sockets (Fig. 2C). Vertex with black line from ocelli area to occipital carina. Temple reddish brown (Fig. 2A). Pronotum reddish brown with black elongate markings next to antero-lateral and pos-

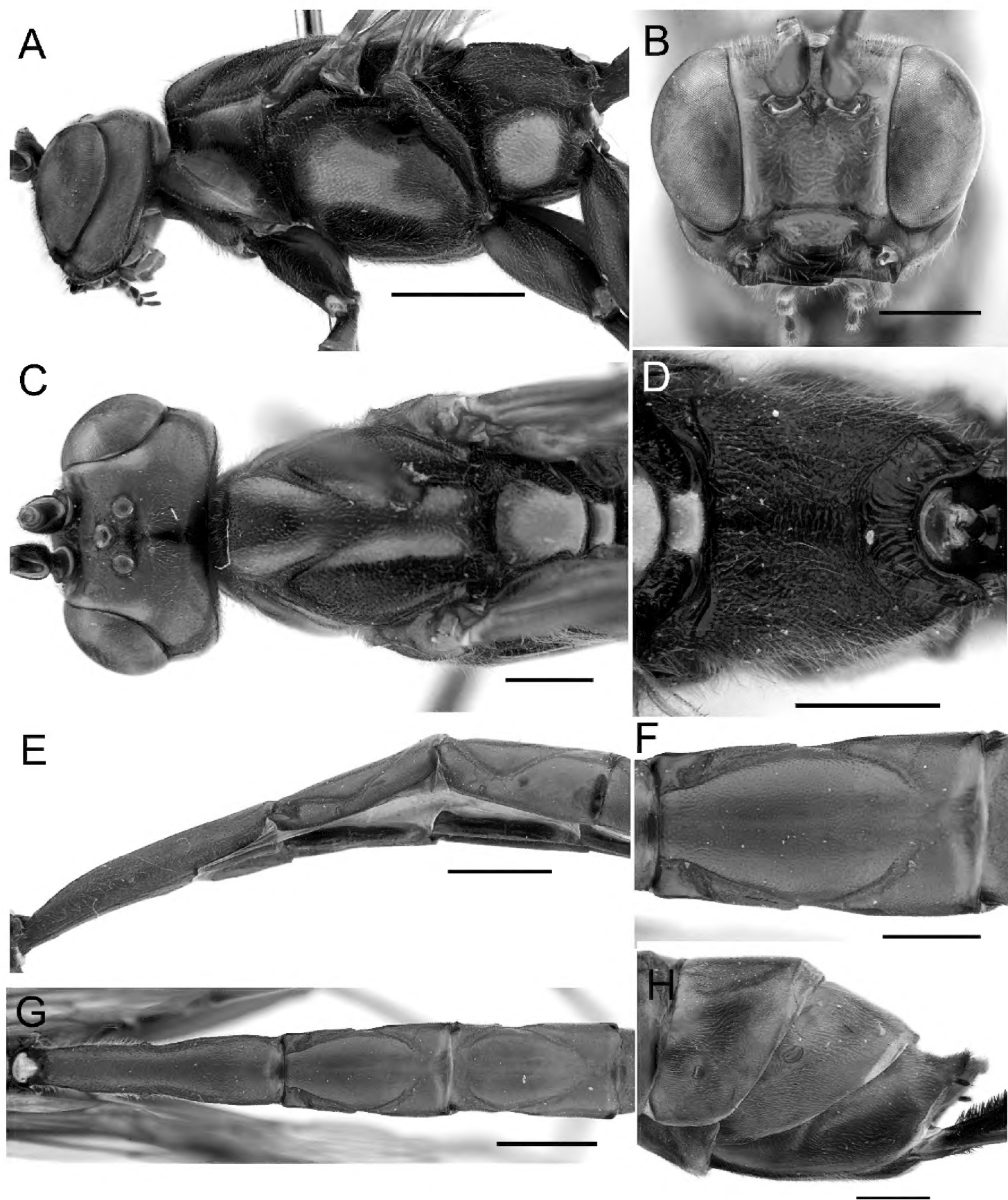


Figure 2. *R. sobaekensis* sp. nov. (holotype). **A** habitus in lateral view **B** head in frontal view **C** Frons and mesoscutum in dorsal view **D** propodeum **E** first to third tergites in lateral view **F** second tergite in dorsal view **G** first to third tergites in dorsal view **H** posterior end of metasoma. Scale bars: 2 mm (**A, E, G**); 1 mm (**B–D, F, H**).

tero-lateral margins, with upper margin yellow posteriorly. Mesoscutum reddish brown with pairs of longitudinal yellow and black spots; median lobe of mesoscutum reddish brown with black spot and yellow longitudinal spots (Fig. 2C). Mesopleuron reddish brown with large yellow spot, upper part of speculum black (Fig. 2A). Mesosternum black. Scutellum and postscutellum yellow (Fig. 2C). Propodeum reddish brown with

black spots anteriorly. Metapleuron reddish brown with anterior margin blackish, with yellow spot below pleural carina. Legs reddish brown. Tibia and tarsus paler. Fore coxa with darkened spots ventrally. Mid and hind coxae with darkened spots dorsally. Wings hyaline, slightly tinged with brown; pterostigma brown, without faint brownish spots around junction of cu-a and Cu1, and on Rs+2r below pterostigma. Metasomal tergites brown to reddish brown. Ovipositor dark brown, sheath black.

Male. Unknown.

Distribution. South Korea.

Region. Eastern Palaearctic.

Etymology. The species is named after Mt. Sobaek National Park, where the holotype specimen was collected.

Remarks. This new species is similar to *R. maculata* (Sheng and Sun 2010), but can be distinguished from by the meso- and metapleuron reddish brown with large yellow spots (evenly reddish brown without yellow spots in *R. maculata*); upper part of speculum and mesosternum black (evenly reddish brown in *R. maculata*); second metasomal tergite about 1.85 times as long as its apical width (about 2.6 times as long as apical width in *R. maculata*); first metasomal tergite short, 1.5 times as long as second tergite (first metasomal tergite 2.0 times as long as second tergite in *R. maculata*).

***Rodrigama koreana* Choi & Lee sp. nov.**

<http://zoobank.org/3DAE4674-C8D8-4216-BD5A-A5CFEDFA05AB>

Figs 1B, 3A–H

Type. Holotype ♀, 18–31.iv.2009 (Malaise trap), Mt. Ungilsan Alt. 99 m (37°34'43.2"N, 127°18'40.1"E), Songchon-ri, Choan-myeon, Namyangju-si, GG, South Korea (J.O. Lim) [DNUE].

Paratypes. [South Korea] 1♀, 8.vi.1996, Hwaechon, Maeji-ri, Heungeup-myeon, Wonju-si, GW, (H.Y. Han & H.W. Byun); 1♀, 25.v.2000, Yonsei Univ, Campus, Maeji-ri, Wonju-si, GW, (B.S. Kang & S.H. Kong); 1♀, 19.iv–23.v.2005, Mt. Cheongmoksan, Mitan-myeon, Pyeongchang-gun, GW, (J.W. Lee); 1♀, 18–31.iv.2009, Mt. Homyeongsan, Goseong-ri, Cheongpyeong-myeon, Gapyeong-gun, Alt. 168 m (37°43'15.0"N, 127°29'18.9"E), GG, (J.O. Lim); 1♀, Mt. Yongmunsan, Yeonsuri, Yongmun-myeon, Yangpyeong-gun, Alt. 324 m (37°31'48.9"N, 127°34'23.8"E), GG, (J.O. Lim).

Description. Female. Length of fore wing 13–14 mm; body 17–20 mm; ovipositor 22–24 mm. Head and mesosoma with long and dense setae. Malar space about 0.42 times as long as basal width of mandible. Inner orbits slightly converging ventrally (Fig. 3B). Occipital carina interrupted medially. Apical flagellomeres tapered and distal end truncate narrowly. Antenna with 32–35 flagellomeres. Pronotum with strongly impressed and transversely striate groove from epomia to ventroposterior corner; area dorsal to this groove rather strongly and densely punctate, slightly rugose (Fig. 3A). Mesoscutum in front of scuto-scutellar groove 1.3 times as long as wide in

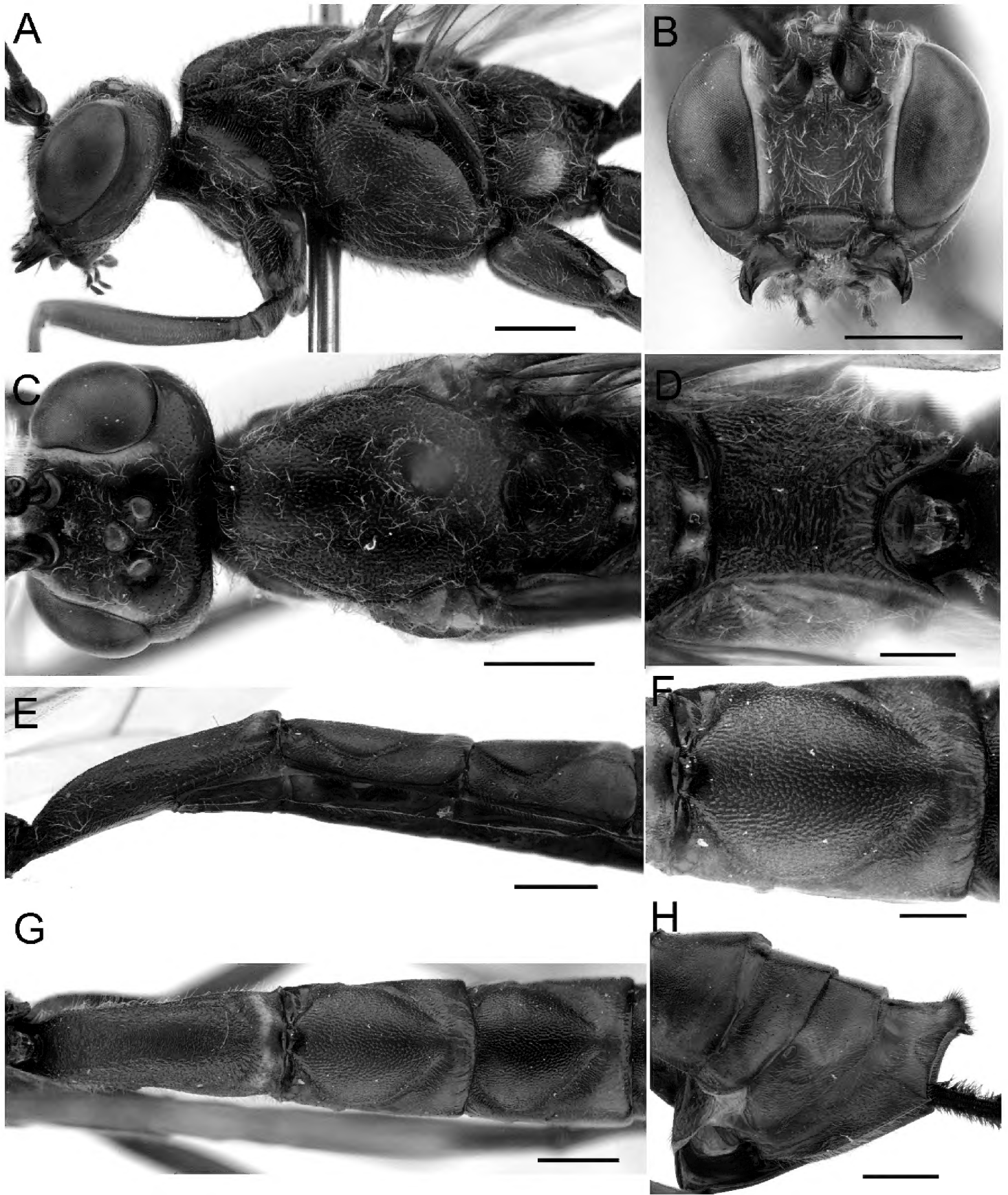


Figure 3. *R. koreana* sp. nov. (holotype). **A** habitus in lateral view **B** head in frontal view **C** Frons and mesoscutum in dorsal view **D** propodeum **E** first to third tergites in lateral view **F** second tergite in dorsal view **G** first to third tergites in dorsal view **H** posterior end of metasoma. Scale bars: 1 mm (**A–C**, **E**, **G–H**); 0.5 mm (**D**, **F**).

dorsal view (Fig. 3C). Mesopleuron densely punctate, rather densely covered with pubescence (Fig. 3A); epicnemial carina present ventrally; mesopleural suture transversely striate. Propodeum rugosely punctate, transversely striate dorsomedially, without lateromedian longitudinal carina; posterior transverse carinae weak and incomplete (Fig. 3D). Hind wing with 10 distal hamuli. Fore tibia with 14 stout spines on dorsal

surface and three stout spines on distal end. Hind coxa elongate, 2.8 times as long as maximum width. First metasomal tergite broadened posteriorly in dorsal aspect, 3.6 times as long as posteriorly broad (Fig. 3G); posterior end of first metasomal sternite at posterior 0.33 between spiracle and posterior end of first metasomal tergite; second to fourth tergites densely covered with strongly fine punctures and minute pubescence.

Coloration. Body largely reddish brown to black. Face with narrow yellow stripe, extending along inner orbit to top of eye (Fig. 3B). Clypeus yellowish brown. Apical half of mandible black. Middle parts on behind of antennal sockets to vertex black in dorsal view (Fig. 3C). Temple reddish brown (Fig. 3A). Pronotum black and reddish brown, antero-lateral margin reddish brown (Fig. 3A). Mesoscutum reddish brown with pairs of longitudinal black spots; median lobe of mesoscutum reddish brown with longitudinal black spots (Fig. 3C). Mesopleuron reddish brown with black spots on margin of mesopleuron; speculum black; mesosternum black; mesepimeron reddish brown; scutellum dark reddish brown to black; postscutellum yellow, with black spot in the middle. Propodeum black; metapleuron reddish brown, with yellow spot below pleural carina. Legs reddish brown to yellowish brown. Tibia and tarsus paler. Fore coxa with darkened spots ventrally. Mid and hind coxae with darkened spots dorsally. All tarsi yellow except for half of hind basitarsus dark brown. Wings hyaline, slightly tinged with brown; pterostigma black, with faint brownish spots around junction of vein R and pterostigma. Metasomal tergites reddish brown to black. Ovipositor dark brown, sheath black.

Male. Unknown.

Distribution. South Korea.

Region. Eastern Palaearctic.

Etymology. The species name is derived from South Korea, the country of the type specimens.

Remarks. This new species is similar to *R. wooki* Choi sp. nov., but can be distinguished from by the second to fourth hind tarsomeres yellow (whitish in *R. wooki*); fore tibia with 14 stout spines on dorsal surface and three stout spines on distal end (fore tibia with four stout spines on dorsal surface and two stout spines on distal end in *R. wooki*); median lobe of mesoscutum reddish brown with longitudinal black spots, scutellum dark reddish brown to black, postscutellum yellow, with black spot in the middle (mesoscutum entirely black, scutellum and postscutellum black in *R. wooki*).

***Rodrigama wooki* Choi, sp. nov.**

<http://zoobank.org/30B1E9C9-36B2-4426-8033-FE3D121D8C67>

Figs 1C, 4A–H

Type. Holotype ♀, 12–26.iv.2008 (Malaise trap), Mt. Unmunsan site 1 (35°38'45"N, 128°57'33"E), Unmun-myeon, Cheongdo-gun, GB, South Korea (J.W. Lee) [DNUE].

Paratypes. [South Korea] 1♀, 17.v.1997, Mt. Dobongsan, Dobong-gu, Seoul, (H.Y. Lim); 1♀, 15.iv.1989, Mt. Suraksan, Nowon-gu, Seoul, (H.I. Jeong); 1♀,

8.v.2010, Mt. Oseosan; 1♀, 13.v.1994, Mt. Sobaeksan, Chungdong, (Y.S. Kim); 1♀, 26.v.1996, Haeyang-ri, Gyesan-gun, CB, (J.I. Kim); 1♀, 5.v.2001, from Eungoksa to 612.8 m peak, Mt. Taehwasan, Docheok-myeon, Gwangju-si, GG, (S.K. Kim & O.Y. Lim); 1♀, 7.vi.1995, Pyochungsa, Milyang-si, GN, (C.S. Park); 1♀, 7.vi.1986, Yonsei Univ. Maeji-ri, Wonju-si, GW, (T.J. Yoon); 1♀, 25.iv.2005, Yonsei Univ. Campus, Maeji-ri, Heungeup-myeon, Wonju-si, GW, (K.W. Oh, M.S. Kim & K.C. Shin); 1♀, 29.v.2004, Ugye-ri, Cheongha-myeon, Pohang-si, GB, (I.R. Shin).

Description. Female. Length of fore wing 10.5–15 mm; body 15–20 mm; ovipositor 18–29 mm. Head and mesosoma with long and dense setae. Malar space about 0.24 times as long as basal width of mandible. Occipital carina interrupted medially. Apical flagellomeres tapered and distal end truncate narrowly. Antenna with 31–32 flagellomeres. Pronotum with strongly impressed and transversely striate groove weakly from epomia to ventroposterior corner; area dorsal to this groove rather strongly and densely punctate, slightly rugose (Fig. 4A). Mesoscutum in front of scuto-scutellar groove 1.4 times as long as wide in dorsal view (Fig. 4C); mesopleuron moderately punctate anteriorly, rather sparsely punctated posteriorly, rather densely covered with pubescence; epicnemial carina present ventrally; mesopleural suture transversely striate. Propodeum rugosely punctate, transversely striate dorsomedially, without lateromedian longitudinal carina; posterior transverse carinae strong but incomplete (Fig. 4D). Hind wing with eight distal hamuli. Fore tibia with four stout spines on dorsal surface and two stout spines on distal end. Hind coxa elongate, 2.8 times as long as maximum width. First metasomal tergite broadened posteriorly in dorsal aspect, 3.1 times as long as posteriorly broad, slightly narrowed a little posterior to spiracle (Fig. 4G); posterior end of first metasomal sternite at posterior 0.47 between spiracle and posterior end of first metasomal tergite; second to fourth tergites closely covered with weak fine punctures and minute pubescence.

Coloration. Body largely reddish brown to black. Face with narrow yellow stripe, extending along inner orbit to top of eye (Fig. 4B). Clypeus yellowish brown. Apical half of mandible black. Frons and vertex black in dorsal view (Fig. 4C). Upper part of temple black, half of lower part yellowish brown in lateral view (Fig. 4A). Pronotum and mesoscutum entirely black, without pairs of black longitudinal spots (Fig. 4A). Mesopleuron black with large reddish brown spot centrally; speculum black (Fig. 4A); mesosternum black; mesepimeron reddish brown; scutellum and postscutellum black. Propodeum black; metapleuron black, with reddish brown spot below pleural carina. Legs brown to black. Tibia and tarsus paler. Hind coxa to femur black; hind tibia to basitarsus blackish brown; second to fourth hind tarsomeres whitish; fifth tarsomere blackish brown.

Wings hyaline, slightly tinged with brown; pterostigma dark brown, with very weak faint brownish spots around junction of vein R and pterostigma.

Metasomal tergites black. Ovipositor dark brown, sheath black.

Male. Unknown.

Distribution. South Korea.

Region. Eastern Palaearctic.

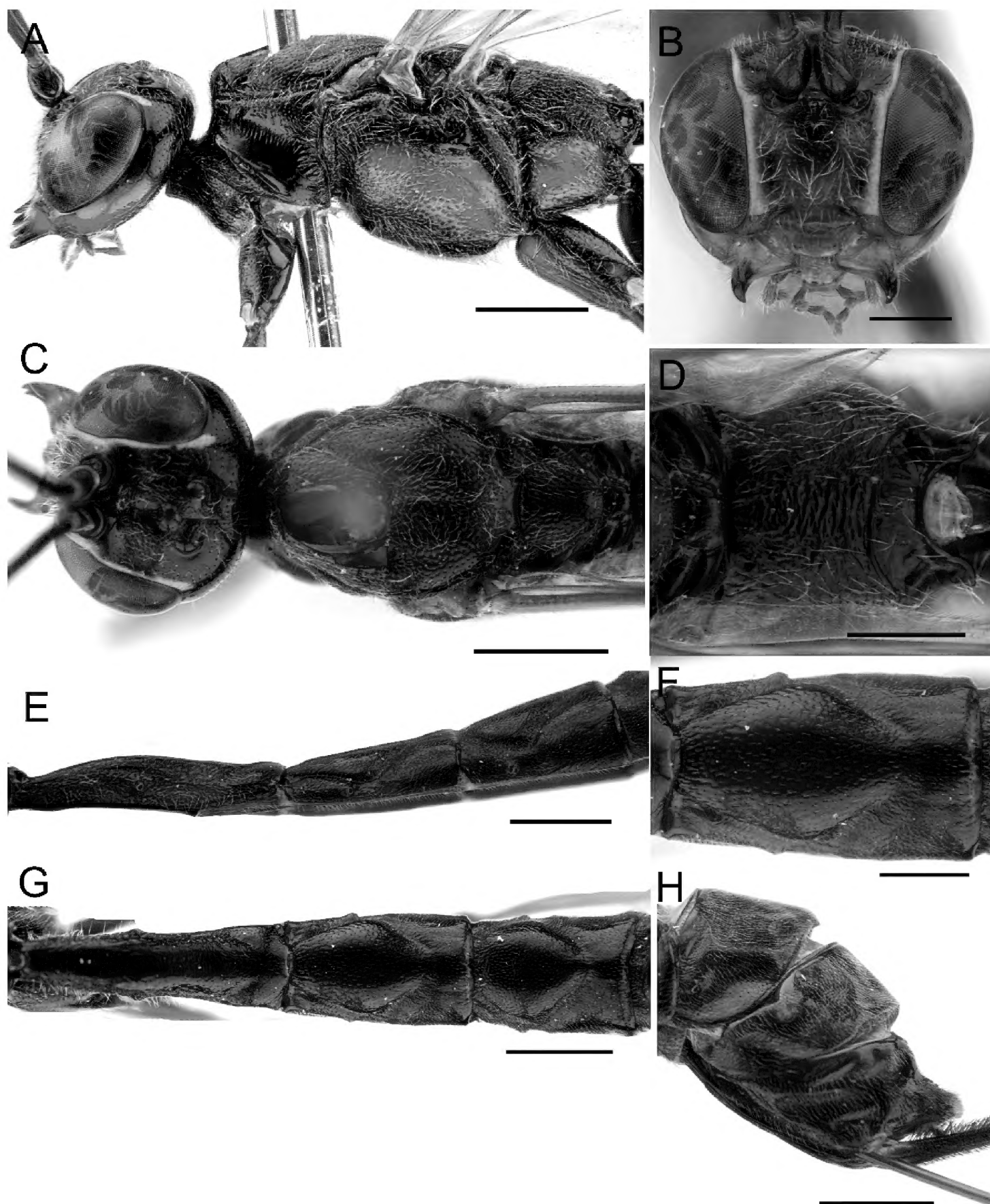


Figure 4. *R. wooki* sp. nov. (holotype). **A** habitus in lateral view **B** head in frontal view **C** Frons and mesoscutum in dorsal view **D** propodeum **E** first to third tergites in lateral view **F** second tergite in dorsal view **G** first to third tergites in dorsal view **H** posterior end of metasoma. Scale bars: 1 mm (**A**, **C**, **E**, **G–H**); 0.5 mm (**B**, **D**, **F**).

Etymology. The species is named after Prof. Jong-Wook Lee who collected the holotype specimen and whose collecting efforts have made a great contribution to research into Korean Ichneumonidae.

Remarks. This new species is similar to *R. longissima* (Sheng and Sun 2010), but can be distinguished by the hind coxa to femur black (hind coxa to femur reddish brown in *R. longissima*); hind tibia to basitarsus blackish brown; second to fourth hind tarsomeres whitish (yellow in *R. longissima*); second metasomal tergite about 1.75 times as long as its apical width (about 3.8 times as long as its apical width in *R. longissima*); first metasomal tergite 1.4 times as long as second tergite (first metasomal tergite long, 1.5 times as long as second tergite in *R. longissima*).

***Rodrigama unmunensis* Choi & Lee, sp. nov.**

<http://zoobank.org/BA6B8734-C8F2-4117-B4A5-8AA86E655D43>

Figs 1D, 5A–H

Type. Holotype ♀, 30.v.2009, Mt. Unmunsan site 2 (35°38'50"N, 128°58'19"E), Unmun-myeon, Cheongdo-gun, GB, South Korea (G.I. Park) [DNUE].

Description. Female. Length of fore wing 11.5 mm; body 15 mm; ovipositor 20 mm. Head and mesosoma with sparse setae. Malar space about 0.31 times as long as basal width of mandible. Occipital carina interrupted medially. Antennal flagellomeres missing. Pronotum with strongly impressed and transversely striate groove from epomia to ventroposterior corner; area dorsal to this groove rather strongly and densely punctate, slightly rugose; lower part of pronotum glabrous (Fig. 5A). Mesoscutum in front of scuto-scutellar groove 1.2 times as long as in dorsal view (Fig. 5C); mesopleuron densely punctate, rather densely covered with pubescence (Fig. 5A); epicnemial carina absent; mesopleural suture transversely striate. Propodeum rugosely punctate, transversely striate dorsomedially, without lateromedian longitudinal carina; posterior transverse carinae very weak and incomplete (Fig. 5D). Hind wing with 8 distal hamuli. Fore tibia with nine stout spines on dorsal surface and three stout spines on distal end. Hind coxa 2.1 times as long as maximum width. First metasomal tergite broadened posteriorly in dorsal aspect, 1.9 times as long as posteriorly broad (Fig. 5G); second to fourth tergites densely covered with strong punctures and minute pubescence.

Coloration. Body largely reddish brown to black. Face with narrow yellow stripe, extending along inner orbit to top of eye (Fig. 5B). Clypeus reddish brown. Apical half of mandible black. Frons and vertex black in dorsal view (Fig. 5C). Upper part of temple black, lower part reddish brown in lateral view (Fig. 5A). Pronotum and mesoscutum entirely black, without pairs of black longitudinal spots (Fig. 5A). Mesopleuron black with large reddish brown spot centrally; speculum black (Fig. 5A); mesosternum black; mesepimeron reddish brown; scutellum and postscutellum black. Propodeum black; metapleuron black, with reddish brown spot below pleural carina. Legs reddish brown to black. Tibia and tarsus paler. Fore coxa reddish brown with black spot in ventral view. Posterior part of mid coxa and trochanter darkened. Hind coxa with black spot dorsally; hind tibia reddish brown, darkened apically; hind tarsus yellow, basitarsus darker proximally. Wings hyaline, slightly tinged with brown; pterostigma

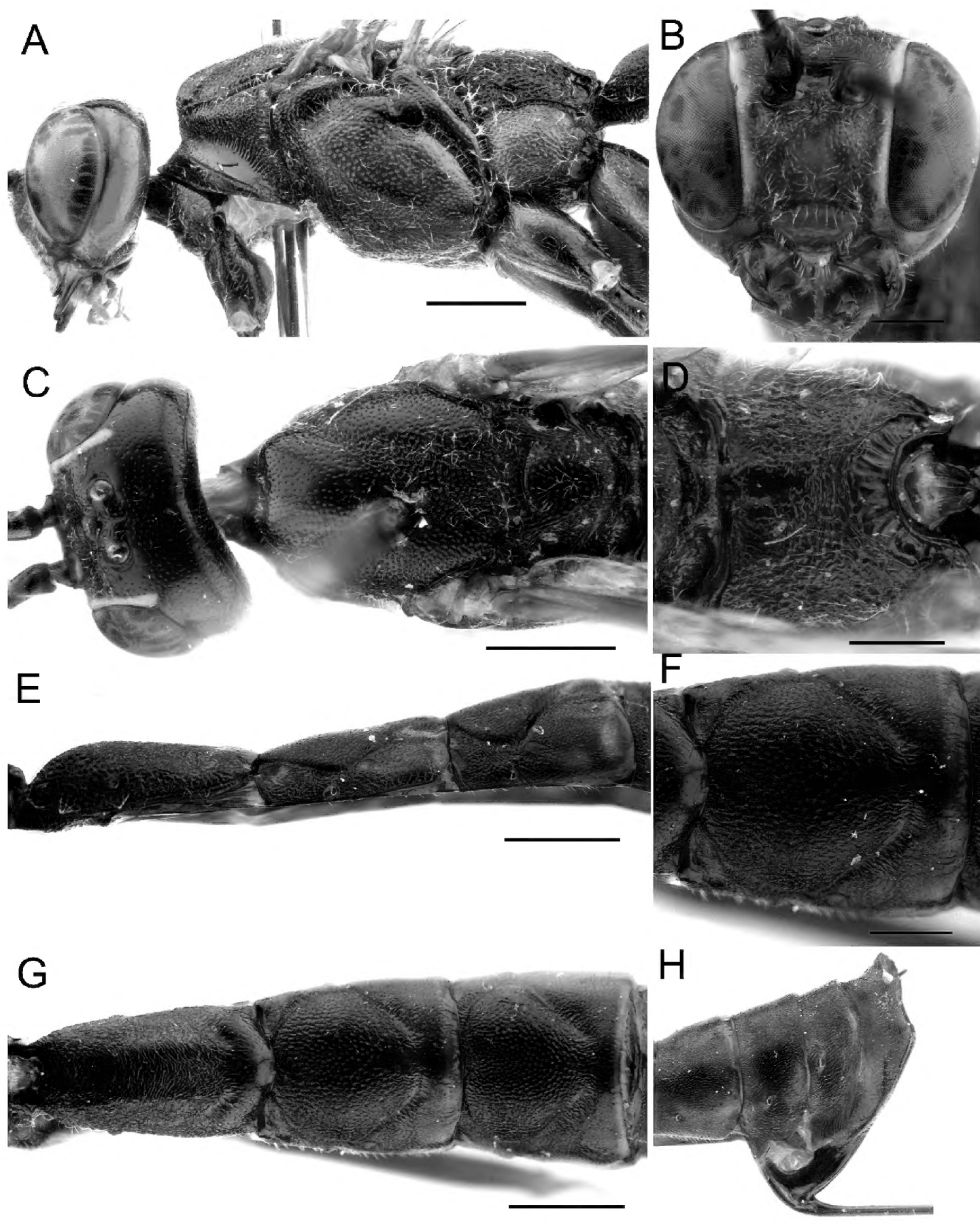


Figure 5. *R. unmunensis* sp. nov. (holotype). **A** habitus in lateral view **B** head in frontal view **C** Frons and mesoscutum in dorsal view **D** propodeum **E** first to third tergites in lateral view **F** second tergite in dorsal view **G** first to third tergites in dorsal view **H** posterior end of metasoma. Scale bars: 1 mm (**A**, **C**, **E**, **G–H**); 0.5 mm (**B**, **D**, **F**).

black, with very weak faint brownish spots around junction of vein R and pterostigma. Metasomal tergites reddish brown to black. Ovipositor dark brown.

Male. Unknown.

Distribution. South Korea.

Region. Eastern Palaearctic.

Etymology. The species is named after Mt. Unmun where the holotype specimen was collected.

Remarks. This new species is similar to *R. taishanense*, but can be distinguished from by the ventral half of the hind coxa reddish brown and its dorsal half black (hind coxa black in *R. taishanense*); posterior parts of metasomal tergites with weak brown lines and metasomal tergites reddish brown to black in lateral view (metasomal tergites black in *R. taishanense*); epicnemial carina absent (*R. taishanense* has the ventral section of the epicnemial carina); the first metasomal tergite of *R. taishanense* is much longer than in the new species.

Acknowledgements

We are deeply grateful to the reviewers and the subject editor Gavin Broad for reviewing this manuscript and constructive criticism that improved this paper. This work was supported by a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (NIBR201902205).

References

- Broad GR, Kuslitzky WS (2019) A new species of *Rodrigama* Gauld (Hymenoptera: Ichneumonidae: Poemeniinae) from Israel: a significant range extension. *Zootaxa* 4567(1): 193–200. <https://doi.org/10.11646/zootaxa.4567.1.12>
- Gauld ID (1991) The Ichneumonidae of Costa Rica, 1. Introduction, keys to subfamilies, and keys to the species of the lower Pimpliform subfamilies Rhyssinae, Poemeniinae, Acaenitinae and Cylloceriinae. *Memoirs of the American Entomological Institute* No. 47: 589 pp.
- Matsumoto R, Broad GR (2011) Discovery of *Rodrigama* Gauld in the Old World, with description of two new species (Hymenoptera, Ichneumonidae, Poemeniinae). *Journal of Hymenoptera Research* 20: 65–75. <https://doi.org/10.3897/jhr.29.872>
- Sheng ML, Sun SP (2010) Parasitic ichneumonids on woodborers in China (Hymenoptera: Ichneumonidae). Science Press, Beijing, 338 pp. [in Chinese with English summary]
- Sheng ML, Sun SP, Ding DS, Luo JG (2013) Ichneumonid Fauna of Jiangxi. Science Press, Beijing, 569 pp.
- Sheng ML, Sun SP (2014) Ichneumonid Fauna of Liaoning. (in Chinese with English abstract) Science Press. Beijing, 464 pp.
- Wahl DB, Gauld ID (1998) The cladistics and higher classification of the Pimpliformes (Hymenoptera: Ichneumonidae). *Systematic Entomology* 23: 265–298. <https://doi.org/10.1046/j.1365-3113.1998.00057.x>
- Yu DS, van Achterberg C, Horstmann K (2016) Taxapad 2016, Ichneumonoidea 2015. Database on flash-drive. Nepean, Ontario. www.taxapad.com [Accessed 1 January 2016]